

HYDROGEN PRODUCED FROM HETEROCYCLIC COMPOUNDS

ABSTRACT

Heterocyclic compounds containing furfural and hydroxymethylfurfural are derived from acidic hydrolysis of biomass. Heterocyclic compounds are vaporized and subjected to reforming and steam shifting to produce a gas containing hydrogen, carbon dioxide and carbon monoxide. The gas containing hydrogen, carbon dioxide and carbon monoxide is scrubbed by a solvent, capable of dissolving carbon monoxide, to produce a gas containing hydrogen, carbon dioxide and substantially devoid of carbon monoxide. The solvent containing dissolved carbon monoxide is heated to provide a solvent for scrubbing and a vapor containing carbon monoxide recycled for additional steam shifting. The gas containing hydrogen, carbon dioxide substantially devoid of carbon monoxide, is further scrubbed of carbon dioxide to produce a gas substantially devoid of carbon monoxide and substantially devoid of carbon dioxide containing hydrogen suitable for use in a fuel cell.